

IN THE CLAIMS:

1. (Currently Amended) A downhole electric motor having at least three phases and comprising:

a permanent magnet rotor; and

a stator ~~bearing phase windings in slots in the stator,~~ comprising:

a laminated stator core having closed slots formed therein; and

phase windings,

wherein:

the phase windings extend through the closed slots,

each phase winding ~~incorporating~~ incorporates a plurality of coils each coil extending through a respective pair of closed ~~stator~~ slots and surrounding a respective portion of the stator core between said stator pair of closed slots, and

adjacent coils of different phases ~~extending~~ extend through opposite parts of a respective one of ~~the stator~~ said pair of closed slots,

said adjacent coils are separated by a gap through which cooling fluid may be pumped to cool the coils, and ~~a thermally conductive projection, with which the coils are held in thermal contact by virtue of the conforming shape of the slot,~~

by virtue of the conforming shape of said respective one of the closed slots, the coils are held in thermal contact with a thermally conductive projection integral with and projecting directly from the stator core and extending at least part of the way across the slot said respective one of the closed slots.

2. (Canceled)

3. (Canceled)

4. (Previously Presented) A motor according to claim 1, wherein the stator

incorporates nine windings extending through nine slots and consisting of three windings for each phase.

5. (Previously Presented) A motor according to claim 1, wherein the stator incorporates twelve windings extending through twelve slots and consisting of four windings for each phase.

6-30. (Canceled)

31. (Previously Presented) A motor according to claim 1, wherein each slot is shaped to conform substantially to the cross-section of the corresponding coils.

32. (Previously Presented) A motor according to claim 1, wherein each of the coils comprises a plurality of coil sections fitted together to form a generally rectangular cross-section.

33. (Previously Presented) A motor according to claim 32, wherein each of the coil sections is encapsulated within a respective electrically insulating layer.

34. (Previously Presented) A motor according to claim 1, wherein each of the coils is encapsulated within a respective electrically insulating layer.

35. (Previously Presented) A motor according to claim 1, wherein the phase windings comprise preformed open ended conductive loops fitted within the stator slots and closed by subsequently applied conductive parts.

36. (Canceled)

37. (Canceled)

38. (Canceled)

39. (Previously Presented) An electric submersible pump incorporating a downhole electric motor according to any preceding claim.